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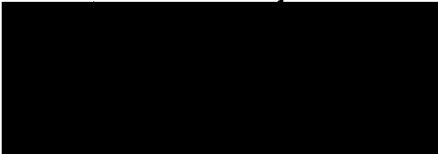
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MEMORANDUM FOR: Economic Defense Intelligence Committee
FROM: Chairman, EDIC
SUBJECT: The Glass Fiber Industry in the Sino-Soviet Bloc
REFERENCE: EDIC Case No. 28, SECRET

The attached intelligence summary has been prepared by CIA in response to the referenced EDIC Case No. 28 initiated by the Department of Commerce. It is now distributed for review and acceptance by EDIC members.

If no request for consideration of this summary in an EDIC meeting is received prior to COB 18 April 1958, it will be considered approved and EDIC Case No. 28 will be regarded as closed.

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Chairman 

Attachment:

The Glass Fiber Industry in the Sino-Soviet Bloc, SECRET/NOFORN

Distribution:

Cat. B - (3-5, 8, 10)
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Deputy Director (Coordination)

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THE GLASS FIBER INDUSTRY IN THE SINO-SOVIET BLOC

A. SUMMARY AND CONCLUSIONS

1. The production of glass fibers in the Sino-Soviet Bloc is small when compared to Free World production, and while current plans call for multifold expansion of productive capacity and output by 1960, industrial and military requirements are expected to increase even more rapidly so that the Bloc as a whole is expected to remain a deficit area.
2. The Sino-Soviet Bloc generally lags behind Western Europe and the United States in the research and development of many types of glass, including optical glass and glass fibers.
3. The Bloc is engaged in extensive and vigorous research activity, particularly in the field of superfine glass fibers to reinforce plastic laminates, but little is being published on specific applications and uses of these materials, possibly for security reasons.
4. However, the Bloc -- notably the USSR, Czechoslovakia, and East Germany -- has the capability and potential for utilizing glass fiber technology and, specifically, glass fiber reinforced plastics to replace metals in many industrial and military applications, such uses being limited primarily by the shortage of the glass fiber materials.

B. DISCUSSION

1. The glass fiber industry of the Sino-Soviet Bloc is very small when compared to that of the United States. Thus total Bloc production of glass fibers in 1957 was estimated at only about 5,000,000 lbs, while United States production for the same period amounted to about 140,000,000 lbs. The principal producer of glass fibers in the Sino-Soviet Bloc is the USSR, and there is some production in the Satellites, notably in Czechoslovakia. The USSR, Czechoslovakia, and East Germany are making strenuous efforts to increase their productive capacity and current plans call for 1960 production of approximately 13,000,000 lbs of glass fibers. Still, as a result of even more rapidly increasing demands for this material, the Bloc as a whole is expected to remain a deficit area for the foreseeable future.

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2. The USSR has a long and successful history of research and development in the field of glass and glass fiber technology. The All Union Scientific Research Institute of Glass Fibers in Moscow was established during the first Five-Year Plan, and by 1937 had constructed the first continuously operating experimental installation for the production of glass cotton. In 1941, a factory was established in the traditional glass-manufacturing center Gus'-Khrustal'nyy to produce fine glass yarn and glass cotton, and by 1948, the Soviet Union had started to produce glass fibers in its biggest factory located in Tallin, formerly the capital of Estonia. Under the Sixth Five-Year Plan, which called for the expansion of glass fiber production to reach an annual output of approximately 11,000,000 lbs by 1960, new plants were to be established at Chernikovsk, Astrakhan', Tomsk, Gus'-Khrustal'nyy, Oshpenko, and Polotsk. In addition, glass fiber production was to start at the Dyat'kovskiy Crystal Plant and the Arzavirskiy Assorted Glassware Plant, as well as at the Sylvenskiy and Tulunskiy Glass plants.

3. Available information does not permit the establishment of a definitive Sino-Soviet use pattern for glass fiber products. However, much as in the Free World, these materials are used for insulating purposes in electrical and electronic equipment, as filters in the chemical and petroleum industries, and, most recently glass fiber reinforced plastics are being used in aviation construction, shipbuilding, and automobile manufacturing, i.e., in a wide range of applications requiring material which possesses a high strength to weight ratio. Recognizing that the tensile strength of glass fibers increases as the diameter of the individual filaments decreases, the USSR has devoted considerable research effort to the development of fibers having a diameter of less than 10 microns, and has reported production of fibers measuring as small as 3 microns in diameter. Czechoslovakia has also conducted extensive research in the field of glass fiber technology, and, in addition to the production of glass yarns, ribbons, and cloth, is manufacturing insulating materials from glass fibers with a diameter of 5 microns for use by the electrical and electronic industries. East Germany, in the past only a marginal producer of glass fibers, reports the manufacture of various types of fibers measuring less than 10 microns in diameter and claims to have developed a process for producing fibers from alkali-free glass.

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4. There is very little information available on the extent of Sino-Soviet Bloc uses of glass-fiber reinforced plastic laminates. A recent article in STEKLO I KERAMIKA (November 1957) states that starting in 1950, the Russian Academy of Sciences, the Institute of Glass, the Institute of Glass Fiber, the Institute of Plastics, etc., joined to conduct extensive scientific research to develop fiber glass reinforced plastics, i.e., materials combining glass fibers and cloth and synthetic resins. In view of the great volume of published reports dealing with western research and development on glass fiber reinforced plastic laminates and the well-known Russian proclivity to exploit and adopt advanced western technology particularly in areas having potential military-strategic significance, it is reasonable to assume that the Soviets are capable of utilizing glass fiber reinforced laminates as structural elements in aircraft, missile, and rocket development, and the increasing requirements for these uses may well account at least in part for the acknowledged continuing shortage of glass fibers even after productive capacity has been expanded as provided for in current plans.

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